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ONTARIO WATER
RESOURCES COMMISSION

ANNUAL REPORT

1961

TOWN OF ORANGEVILLE

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ANNUAL REPORT

ON

TOWN OF ORANGEVILLE

SEWAGE TREATMENT PLANT

OWRC PROJECT - 58-S-16

ORANGEVILLE SEWAGE TREATMENT PLANT

OPERATED FOR

THE TOWN OF ORANGEVILLE

BY

THE ONTARIO WATER RESOURCES COMMISSION

Mr. A. M. Snider	-	Chairman
Dr. A. E. Berry	-	General Manager
Mr. D. S. Caverly	-	Assistant General Manager, and Director of Plant Operations
Mr. B. C. Palmer	-	Assistant Director, Division of Plant Operations
Mr. M. B. Fielding	-	Project Engineer, Division of Plant Operations

Prepared by the Division of Plant Operations

ORANGEVILLE SEWAGE TREATMENT PLANT

GENERAL

The Town of Orangeville up to 1959 was operating a sewage plant which had been in service for many years and was proving inadequate under the conditions of flow and required treatment results. The consulting engineering firm of Proctor and Redfern was retained by the town to design a new plant to be built with the assistance of the Ontario Water Resources Commission. A contract was awarded to Frid Construction Company Limited and in May of 1960 the new portions of the plant consisting of a pump house and control building, grit channels, primary clarifier, overflow division chamber and chlorine contact chamber were placed in operation. The existing sections of the plant were renovated and placed in operation in December of 1960.

PLANT DESCRIPTION

The plant provides complete treatment, using the activated sludge process, for approximately 250,000 gallons per day. Facilities for primary treatment are provided for a daily flow of 750,000 gallons.

The plant units are as follows:

1. Screening

- coarse screen at pump well,
- fine screen at grit channel,
- both hand cleaned.

2. Grit Removal

- 2 controlled velocity grit channels,
25' x 3' x 1'-11"
- $\frac{1}{2}$ min. retention

3. Primary Clarifier

- 1 unit, 35' dia. x 12'
- 2 $\frac{1}{2}$ hrs. detention at 0.75 MGD
- 750 gals/ft.² surface/day
- 7350 gals/ft. weir/day

4. Aeration

- 6 units, 8' x 27' x 12'
- 8 hrs. detention at 0.25 MGD (+ return)
- 2 blowers 12 x 5, Babcock-Wilcox

5. Final Clarifiers

- 2 units 14' x 14' x 10'
- 2 hrs. detention at 0.25 MGD

6. Chlorine Contact Chamber

- 1 unit 32'-6" x 16' x 7'
- 30 min. retention
- max. dosage - 75 lbs/day.

7. Sludge Holding Tank

- 1 unit 17'-6" dia. x 15'
- disposal of liquid sludge by tank truck.

PLANT OPERATION

The plant is operated by Mr. C. G. Clarke under the general supervision of the staff of the Division of Plant Operations.

Mr. Clarke is an able, conscientious operator and does a commendable job in operating the plant.

The sewage received at this plant is of standard domestic quality. In 1961, the average influent BOD and suspended solids content in the raw sewage was 193 ppm and 210 ppm respectively. Primary treatment removed an average of 46 ppm of the BOD and 106 ppm of the suspended solids.

The average daily flow throughout the year was 0.46 million gallons. It is estimated that 0.25 MGD of this received secondary treatment, which gave a further removal of 132 ppm BOD and 77 ppm in suspended solids. The effluent from the secondary treatment section was then mixed with that portion of the sewage which had been given primary treatment only. This produced a final plant effluent containing an average of 72 ppm BOD and 72 ppm suspended solids.

Thus the plant efficiency was as follows:

	<u>BOD Reduction</u>	<u>Suspended Solids</u>
1. Primary treatment	24%	50%
2. Secondary treatment	92	87
3. Overall plant treatment	63	66

The total recorded flow for 1961 was 168.6 million gallons. This contained approximately 163 tons of BOD of which 103 tons were removed and 177 tons of suspended solids, of which 117 were removed.

PLANT COST

The operating cost for 1961 was \$12,992.61. This is broken down as follows:

Payroll	\$ 4,153.00
Fuel	431.66
Power	1,760.27
Chemicals	822.58
General Supplies	992.31
Equipment	370.58
Repairs and Maintenance	506.42
Sludge Haulage	2,530.00
Insurance (3 yr. premium)	318.86
Taxes	934.05
Sundry	<u>172.38</u>
TOTAL	\$ 12,992.61

On the basis of flow treated, the cost of operation was approximately \$77 per million gallons. This is the equivalent of \$125 per ton of BOD removed, or \$111 per ton of suspended solids removed. These figures are in line with the costs obtained in other plants.

The total cost to the municipality during 1961 was as follows:

Operating	\$ 12,992.61
Debt Retirement	4,510.25
Reserve	1,244.25
Interest	9,588.74
TOTAL	\$ 28,335.85

On the basis of a population of 4,700, the annual cost of the sewage treatment plant was approximately \$6 per person.

For 1962, the operating costs are estimated as follows:

Payroll	\$ 4,800
Fuel	600
Power	2,000
Chemicals	1,000
General Supplies	1,200
Equipment	800
Repair & Maintenance	1,000
Sludge Haulage	3,000
Insurance & Taxes	400
Sundry	500
Operating Contingency	700
TOTAL	\$ 16,000

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